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Analysis Report

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ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Integral Consulting Inc.
Suite 190
285 Century Place
Louisville CO 80027

Report Date: June 20, 2016

Project: Solvay Monthly NPDES

Submittal Date: 06/01/2016
Group Number: 1667443
State of Sample Origin: NJ

Client Sample Description	Lancaster Labs (LL) #
V-915 Grab Water	8406613
Field Blank Grab Water	8406614

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ .

Electronic Copy To	Integral Consulting Inc.	Attn: Mitch Gertz
Electronic Copy To	Integral Consulting Inc.	Attn: Mark Christensen

Respectfully Submitted,

Lyssa M. Longenecker
Specialist

(717) 556-7321

Sample Description: V-915 Grab Water
PFNA Sampling

LL Sample # WW 8406613
LL Group # 1667443
Account # 20003

Project Name: Solvay Monthly NPDES

Collected: 05/31/2016 09:00 by MC

Submitted: 06/01/2016 19:20
Reported: 06/20/2016 12:49

Integral Consulting Inc.
Suite 190
285 Century Place
Louisville CO 80027

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
Misc. Organics	**EPA 537 Rev. 1.1 modified**		**ng/l**		**ng/l**	**ng/l**	
10954	Perfluorooctanoic acid	335-67-1	200		1	2	1
10954	Perfluorononanoic acid	375-95-1	970		10	20	10
10954	Perfluorodecanoic acid	335-76-2	6		1	2	1
10954	Perfluoroundecanoic acid	2058-94-8	25		2	4	1
10954	Perfluorododecanoic acid	307-55-1	N.D.		3	5	1
10954	Perfluorotridecanoic acid	72629-94-8	N.D.		2	4	1
10954	Perfluorotetradecanoic acid	376-06-7	N.D.		3	5	1
10954	Perfluorohexanoic acid	307-24-4	7		1	2	1
10954	Perfluoroheptanoic acid	375-85-9	18		1	2	1
10954	Perfluorobutanesulfonate	375-73-5	6	J	4	10	1
10954	Perfluorohexanesulfonate	355-46-4	N.D.		4	10	1
10954	Perfluoro-octanesulfonate	1763-23-1	N.D.		5	10	1

Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10954	PFAAs in Water by LC/MS/MS	EPA 537 Rev. 1.1 modified	1	16160002	06/17/2016 10:02	Jason W Knight	1
10954	PFAAs in Water by LC/MS/MS	EPA 537 Rev. 1.1 modified	1	16160002	06/17/2016 14:50	Jason W Knight	10
14091	PFAA Water Prep	EPA 537 Rev. 1.1 modified	1	16160002	06/10/2016 09:30	Jason W Knight	1

*=This limit was used in the evaluation of the final result

Sample Description: Field Blank Grab Water
PFNA Sampling

LL Sample # WW 8406614
LL Group # 1667443
Account # 20003

Project Name: Solvay Monthly NPDES

Collected: 05/31/2016 09:00 by MC

Submitted: 06/01/2016 19:20
Reported: 06/20/2016 12:49

Integral Consulting Inc.
Suite 190
285 Century Place
Louisville CO 80027

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Misc. Organics	**EPA 537 Rev. 1.1 modified**		ng/l	ng/l	ng/l	
10954	Perfluorooctanoic acid	335-67-1	N.D.	1	2	1
10954	Perfluorononanoic acid	375-95-1	N.D.	1	2	1
10954	Perfluorodecanoic acid	335-76-2	N.D.	1	2	1
10954	Perfluoroundecanoic acid	2058-94-8	N.D.	2	4	1
10954	Perfluorododecanoic acid	307-55-1	N.D.	3	5	1
10954	Perfluorotridecanoic acid	72629-94-8	N.D.	2	4	1
10954	Perfluorotetradecanoic acid	376-06-7	N.D.	3	5	1
10954	Perfluorohexanoic acid	307-24-4	N.D.	1	2	1
10954	Perfluoroheptanoic acid	375-85-9	N.D.	1	2	1
10954	Perfluorobutanesulfonate	375-73-5	N.D.	4	10	1
10954	Perfluorohexanesulfonate	355-46-4	N.D.	4	10	1
10954	Perfluoro-octanesulfonate	1763-23-1	N.D.	5	10	1

Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10954	PFAAs in Water by LC/MS/MS	EPA 537 Rev. 1.1 modified	1	16160002	06/17/2016 10:20	Jason W Knight	1
14091	PFAA Water Prep	EPA 537 Rev. 1.1 modified	1	16160002	06/10/2016 09:30	Jason W Knight	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: Integral Consulting Inc. Group Number: 1667443
Reported: 06/20/2016 12:49

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL**	LOQ
	ng/l	ng/l	ng/l
Batch number: 16160002	Sample number(s): 8406613-8406614		
Perfluorooctanoic acid	N.D.	1	2
Perfluorononanoic acid	N.D.	1	2
Perfluorodecanoic acid	N.D.	1	2
Perfluoroundecanoic acid	N.D.	2	4
Perfluorododecanoic acid	N.D.	3	5
Perfluorotridecanoic acid	N.D.	2	4
Perfluorotetradecanoic acid	N.D.	3	5
Perfluorohexanoic acid	N.D.	1	2
Perfluoroheptanoic acid	N.D.	1	2
Perfluorobutanesulfonate	N.D.	4	10
Perfluorohexanesulfonate	N.D.	4	10
Perfluoro-octanesulfonate	N.D.	5	10

LCS/LCSD

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 16160002	Sample number(s): 8406613-8406614								
Perfluorooctanoic acid	200	183.1	200	194.85	92	97	70-130	6	30
Perfluorononanoic acid	200	189.12	200	181.32	95	91	70-130	4	30
Perfluorodecanoic acid	200	168.35	200	181.8	84	91	70-130	8	30
Perfluoroundecanoic acid	200	176.62	200	197.48	88	99	70-130	11	30
Perfluorododecanoic acid	200	188	200	170.87	94	85	70-130	10	30
Perfluorotridecanoic acid	200	172.87	200	183.97	86	92	70-130	6	30
Perfluorotetradecanoic acid	200	169.34	200	195.16	85	98	70-130	14	30
Perfluorohexanoic acid	200	187.42	200	186.12	94	93	70-130	1	30
Perfluoroheptanoic acid	200	169.44	200	168.88	85	84	70-130	0	30
Perfluorobutanesulfonate	176.8	137.99	176.8	190.39	78	108	70-130	32*	30
Perfluorohexanesulfonate	189.2	153.28	189.2	174.07	81	92	70-130	13	30
Perfluoro-octanesulfonate	191.2	133.02	191.2	182.49	70	95	70-130	31*	30

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Integral Consulting Inc. Group Number: 1667443
Reported: 06/20/2016 12:49

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ng/l	MS Spike Added ng/l	MS Conc ng/l	MSD Spike Added ng/l	MSD Conc ng/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 16160002	Sample number(s): 8406613-8406614 UNSPK: 8402616									
Perfluorooctanoic acid	N.D.	200	176.93			88		70-130		
Perfluorononanoic acid	N.D.	200	165.5			83		70-130		
Perfluorodecanoic acid	N.D.	200	188.71			94		70-130		
Perfluoroundecanoic acid	N.D.	200	171.76			86		70-130		
Perfluorododecanoic acid	N.D.	200	163.56			82		70-130		
Perfluorotridecanoic acid	N.D.	200	156.79			78		70-130		
Perfluorotetradecanoic acid	N.D.	200	153			76		70-130		
Perfluorohexanoic acid	N.D.	200	160.11			80		70-130		
Perfluoroheptanoic acid	N.D.	200	184.67			92		70-130		
Perfluorobutanesulfonate	N.D.	176.8	173.71			98		70-130		
Perfluorohexanesulfonate	N.D.	189.2	198.75			105		70-130		
Perfluoro-octanesulfonate	N.D.	191.2	173.99			91		70-130		

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Environmental Analysis Request/Chain of Custody

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Acct. # 20003 Group # 1667443 Sample # 8406613-14

COC # 496864

Client Information

Client: Solvay Spec. Polymers	Acct. #:
Project Name/#: PFNA Sampling	PWSID #:
Project Manager: Mark Christensen	P.O. #:
Sampler: Mark Christensen	Quote #:
State where samples were collected: NJ	For Compliance: Yes ☑ No ☐

Matrix

Soil ☐ Sediment ☐ Water: Potable ☐ Ground ☐ NPDES ☐ Surface ☑ Other: ____

Analysis Requested

Preservation Codes

Sample Identification	Collected Date	Collected Time	Grab	Composite	Total # of Containers	PFAA by LC/MS/MS
V-915	5/31/16	0900	X		2	X
Field Blank	5/31/16	0900	X		1	X

For Lab Use Only

FSC: ____

SCR#: 187178

Preservation Codes

H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 O=Other

Remarks

Turnaround Time (TAT) Requested (please circle)

Standard Rush

(Rush TAT is ~~subject to~~ laboratory approval and surcharge.)

Date results are needed: 6/15/16

E-mail address: mark.christensen@solvay.com

Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) Type VI (Raw Data Only)

Type III (Reduced non-CLP) NJ DKQP TX TRRP-13

NYSDEC Category A or B MA MCP CT RCP

Relinquished by	Date	Time	Received by	Date	Time
Bottle Storage MD	6/1/16	1405			
Mark Ch	6/1/16	0830			
			Received by	6/1/16	1920

EDD Required? Yes (No)

If yes, format: ____

Site-Specific QC (MS/MSD/Dup)? Yes (No)

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier:

UPS ____ FedEx ____ Other ____

Temperature upon receipt 1.9 °C

6/1/16 (3)

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Sample Administration Receipt Documentation Log

Doc Log ID: 148664

Group Number(s): 1667443

Client: Solvay Spec

Delivery and Receipt Information

Delivery Method:	ELLE Courier	Arrival Timestamp:	06/01/2016 19:20
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	NJ		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	N/A
Samples Chilled:	Yes	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	No
Samples Intact:	Yes		
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Karen Diem (3060) at 20:59 on 06/01/2016

Samples Chilled Details

Thermometer Types: *DT = Digital (Temp. Bottle)* *IR = Infrared (Surface Temp)* *All Temperatures in °C.*

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT146	1.9	DT	Wet	Y	Bagged	N

2425 New Holland Pike
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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

<	less than
>	greater than
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
ppb	parts per billion
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Laboratory Data Qualifiers:

B - Analyte detected in the blank
C - Result confirmed by reanalysis
E - Concentration exceeds the calibration range
J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U - Analyte was not detected at the value indicated
V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference…

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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